REMARKS

Favorable reconsideration of this Application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 8-12 and 19-22 remain pending in the present Application. Claim 17 has been canceled without prejudice or disclaimer as it was substantially similar to Claim 15. Likewise, Claims 13-16, 18 and 20 have been canceled without prejudice or disclaimer to be pursued in a divisional application. Claims 8, 10, and 12 have been amended to clarify that the ECC data structure is expressed on the optical disc as a same physical data cluster.[1] Claims 9 and 11 have been amended to recite that user data is "expressed" on the disc to account for processing changes to the user data, such as scrambling. New Claims 19-22 are supported by the Application and drawings as originally filed.[2] No new matter has been added.

By way of summary, the Official Action presents the following issues: Claims 8-12 stand rejected under 35 U.S.C. § 103 as being unpatentable over Takemura et al. (U.S. Patent No. 6,078,559, hereinafter Takemura) and further in view of Sako et al. (U.S. Patent No. 5,966,359, hereinafter Sako).

Applicant thanks Examiners Shah and Bullock for the courtesy of an interview extended to the Applicant's representative on July 12, 2004. During the interview, the rejections noted in the outstanding Official Action were discussed. Specifically, Applicant's representative discussed the Takemura and Sako references relative to the claims. As discussed with the Examiners, Applicants have included language in the claims for more particularly pointing out the ECC coding process and expression of independent error

[1] The physical data cluster includes interleaved rows to distribute parity data, modulated data, SYNC data and the like, and, as such is not an ECC data structure, per se, but an expression of this structure on the disc. Moreover, the term "cluster" is added to define a unit of the physical data layer.
[2] For example, see page 13, 2nd full paragraph.

correction coded blocks defining a single physical data cluster. Comments presented in the interview are reiterated below.

REJECTION UNDER 35 U.S.C. § 103

The Official Action has rejected Claims 8-12 under 35 U.S.C. § 103 as being unpatentable over Takemura in view of Sako. The Official Action cites Takemura as disclosing the Applicant's invention with the exception of user data and control information within the error correction code. The Official Action cites Sako as disclosing user data and control information within the error correction code and states it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references to arrive at the Applicant's claims. Applicant respectfully traverses the rejection.

Claim 8 recites, *inter alia*, an optical disc including:

> An optical disc having a data format, comprising:
> a first ECC data structure including at least a user data and control information disposed in a first ECC block;
> a second ECC data structure including at least an ID information of a physical sector disposed in a second ECC block, the first and second ECC blocks are error correction coded independently; and
> wherein the first and second ECC blocks are expressed on the disc in a same physical data cluster.

At the outset, Applicant provides the following related discussion of optical disc data structures and signal processing steps for the purposes of providing a background to the discussion of the Applicant's invention relative to the cited references.

As shown in Figure 1 of the Application, a logical data structure at a first stage of signal processing includes "data sectors." This logical data may incorporate user data, control information, and ID information. These "logical data sectors" are then scrambled and Reed-Solomon error correction coding information is added to each group of data sectors to form an ECC block having inner-code parity (PI) and outer-code parity (PO). At the ECC

stage of signal processing, the data sectors are encoded in an ECC block as shown in the middle stage of Figure 1.

Subsequently, a "recording sector" is formed. The recording sector is the sector after ECC-encoding and is the "data sector" with a supplement consisting of the outer-code parity (PO) and the inner-code parity (PI).[3] Finally, the physical structure shown as the bottom stage in Figure 1 includes "physical sectors," which are sectors after the EFM 8/14 (eight to fourteen modulation) and addition of a SYNC code to the head of every "recording sector."[4]

Thus, as explained in the Background of the Invention section of the present Application, present processing schemes are not adequate for storing dynamic images to an optical disc as such applications require a more robust error correction capability. The reason for this inadequacy is rooted in the limitation and size of the error correction codes used in ECC blocks. Typically, the ECC coding process employs Reed-Solomon (RS-PC) encoding only. In other words, it is not presently possible to employ a long distance code (LDC) in current ECC processing schemes as the utilization of such a larger code would displace identification information (ID) in the ECC block. The displacement of the ID information precludes the expression of the ECC block having LDC into a same physical data structure on the disc.[5]

Due, in part, to the above deficiency in the art, the present invention is provided. With the above background in mind, a brief comparison of the claimed invention to that of the cited references is believed to be in order.

Takemura describes an optical disc having a read-only area (4) in which a plurality of read-only tracks are formed and a rewritable area (3) in which a plurality of rewritable tracks

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[3] Application at Figure 2.
[4] Applicants note that the 8/14 conversion refers to a CD data structure, however, the present invention is equally applicable to alternative formats, such as DVD (8/16), for example.
[5] Application at pages 5-6.

are formed.[6] As shown in Figures 7A-7C, sector formats for the read-only area are shown. As shown in Figure 7A, user data and ID information is shown in a data sector of a logical format. Figure 7B shows the ECC structure corresponding to the data sector structure of Figure 7A. Figure 7C shows the expression of the ECC data sectors in physical format. Likewise, the sector format for the rewritable area is shown in Figure 9 and has the same configuration as the format for the read-only area shown in Figure 7C.[7]

Sako describes a data recording apparatus provided for adjusting the size of a data sector (i.e., logical data structure) so that competing disc formats can utilize a block of a predetermined size. For example, the differing sector sizes improve compatibility between CD-ROM and DVD so that CD-ROM data can be recorded in DVD format.

Conversely, in an exemplary embodiment of the Applicant's invention, ECC blocks are independently for error correction coded, and ID information used for synchronizing and addressing physical sectors of one ECC block is coded in a separate ECC block. Thus, the ID information may be positioned at the head of each physical sector in a same physical data cluster. In other words, since the ECC blocks are independent of each other, the logical sector can be composed without concern of the ID information being displaced by the use of a LDC. As Takemura, at Figures 7C and 9 describe separate physical formats of a rewritable area and a read only area, Takemura does not disclose or suggest independently coded ECC blocks, one of which containing an ID information which are expressed on a disc in a same physical data cluster. As can be appreciated, Sako does not satisfy the deficiency of Takemura. Accordingly, neither Takemura alone, or in combination with Sako disclose or suggest any ECC independent formatting as recited in Applicant's Claim 8 or any claim depending therefrom.

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[6] Takemura at column 9, lines 63-65.
[7] Takemura at column 10, lines 13-16.

Further, with respect to dependent Claim 9, the Official Action cites Sako, Figure 8, column 8, lines 27-31, as disclosing an error correcting code having a long distance code in one direction and user data arranged in a same direction as the error correcting code.

Applicant notes that Figure 8 discloses a CD-ROM data structure which does not use a LDC code. While the portion of the text cited in the Official Action mentions a LDC, however, there is no description or suggestion that the long distance code be arranged in any specific direction relative to the expression of user data. Accordingly, in addition to the reasons above, Applicant respectfully submits that Claim 9 is also patently distinguished over the cited references.

As Claims 10-12 recite substantially the same limitations discussed above in independent and/or dependent forms, Applicant respectfully submits that these claims are likewise allowable at least for the same reasons.

Accordingly, Applicant respectfully requests that the rejection of Claims 8-12 under 35 U.S.C. § 103 be withdrawn.

NEW CLAIMS

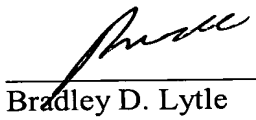
New Claims 19-22 are allowable over the cited references at least for the same reasons discussed above. Likewise, new Claims 20-22 recite that the optical disc include a same data physical structure of expressed, independently coded ECC blocks in which the ID information of one ECC block is operative to access physical sectors of the same physical data structure. This more detailed of the Applicant's invention is not disclosed or suggested by the cited references.

CONCLUSION

Consequently, in view of the present amendment and in light of the foregoing comments, it is respectfully submitted that the invention defined by Claims 8-12 and 19-22 are patently distinguished over the prior art. The present Application is, therefore, believed to be in condition for formal allowance, and, an early and favorable reconsideration of the Application is therefore requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Bradley D. Lytle
Attorney of Record
Registration No. 40,073

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

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